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INNOVATIONS IN POLICY AND PRACTICE

Drug checking at an electronic dance music festival during the public health overdose emergency in British Columbia

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Abstract

Setting Shambhala is a 5-day electronic dance music (EDM) festival held in rural British Columbia that annually hosts between 15,000 and 18,000 people on a 500-acre ranch. The AIDS Network Outreach & Support Society (ANKORS) has provided harm reduction services throughout the duration of the festival since 2003, including point-of-care drug checking, which allows real-time testing of illicit substances to assess their composition. Drug checking results are provided directly to clients and displayed in aggregate on a screen for all attendees to see.

Intervention In 2017, ANKORS added fentanyl checking to their repertoire of drug checking technologies for festivalgoers. Volunteers used a brief survey to collect information on what clients expected the samples to contain. Volunteers carried out drug checks and subsequently logged test results. ANKORS provided an amnesty bin at the tent for clients who chose to discard their substances.

Outcomes Of the 2683 surveys, 2387 included data on both the client's belief and the actual test result. Clients were more likely to discard when the test result differed from their belief (5.16%) than when their belief was confirmed (0.69%). Discarding increased to 15.54% when the test could not clearly identify a substance and to 30.77% if the client did not have a prior belief of the substance. Of 1971 samples tested for fentanyl, 31 tested positive and 16.13% of clients discarded compared to 2.63% in the negative group.

Implications Drug checking services appeal to festivalgoers who, when faced with uncertainty, may discard their substances. This innovative harm reduction service allows for a personalized risk discussion, potentially reaching others via word-of-mouth and early warning systems.

Résumé

Contexte Shambhala est un festival de musique électronique qui se déroule sur cinq jours dans un ranch de 500 acres en campagne britanno-colombienne et qui accueille de 15 000 à 18 000 personnes. L'AIDS Network Outreach & Support Society (ANKORS) offre des services de réduction des méfaits pour toute la durée du festival depuis 2003, notamment sous forme d'analyses en temps réel de la composition de substances illicites dans des points de service. Les résultats sont remis directement aux clients et affichés sous leur forme brute dans un tableau général que peuvent voir tous les festivaliers.

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Intervention En 2017, l'ANKORS a pour la première fois employé les technologies permettant d'effectuer des analyses de teneur en fentanyl. Les bénévoles ont fait remplir un sondage sur ce que les clients pensaient qu'on trouverait dans leurs échantillons. Ils ont effectué les tests puis ont consigné les résultats. L'ANKORS fournissait une « boîte d'amnistie » à sa tente pour les festivaliers qui ont choisi de se débarrasser de leur substance.
Résultats Des 2 683 sondages remplis, 2 387 comprenaient des données permettant une comparaison entre ce que croyait le client et le résultat obtenu. Les clients étaient plus portés à se débarrasser de leur substance si les résultats s'éloignaient de ce qu'ils croyaient (5,16 %) que s'ils confirmaient leurs hypothèses (0,69 %). La proportion de gens qui ne voulaient plus de leur substance a atteint 15,54 % dans les cas où l'analyse ne pouvait en déterminer clairement la composition et 30,77 % si le client n'avait aucune idée de ce que la substance pouvait contenir. Des 1 971 échantillons dans lesquels on a voulu déterminer la présence de fentanyl, 31 ont reçu des résultats positifs; 16,13 % des festivaliers concernés ont décidé de jeter leur substance, contre 2,63 % parmi le groupe des festivaliers dont les résultats ont été négatifs.
Conclusions Les services d'analyse de drogues présentent un intérêt pour les festivaliers qui, dans l'incertitude, ont tendance à se débarrasser de leur substance. C'est un service de réduction des méfaits novateur qui interpelle les gens en leur montrant les risques qu'ils courent personnellement; d'autres pourraient ainsi être portés à s'en prévaloir grâce au bouche-à-oreille et dans le cadre d'une approche préventive.

Keywords Electronic music festival · Drug checking · Fentanyl

Mots-clés Festival de musique électronique · Analyse de drogues · Fentanyl

Background

Across Canada, there has been an unprecedented increase in unintentional opioid overdose death rates largely due to fentanyl adulteration in the illicit drug supply (Illicit Drug Overdose Deaths in BC 2008). In British Columbia (BC) alone, the number of deaths almost doubled from 518 deaths in 2015 to 995 deaths in 2016, leading the Provincial Health Officer to declare an overdose public health emergency (Order of the Minister of Health 2018). Despite multifaceted response efforts (Overview: provincial Overdose Emergency Response 2018), illicit overdose deaths continued to rise throughout 2017, reaching a new record of 1449 annual deaths. As such, illicit drug overdose deaths have become the main cause of unnatural death in BC, exceeding the number of deaths from motor vehicle incidents, suicides, and homicides combined (Illicit Drug Overdose Deaths 2008).

Since 2003, the AIDS Network Outreach & Support Society (ANKORS) has provided harm reduction services, including point-of-care drug checking, to guests at Shambhala festival, one of the largest and longest running electronic dance music (EDM) festivals in Canada (Shambhala Music Festival 2018). Drug checking allows people to learn the chemical composition and corresponding expected pharmacological effects of the street drugs they intend to consume. This information empowers individuals who use drugs to make better-informed decisions about whether, where, how, or with whom to consume the tested substance, which is hoped to trigger behaviour change towards safer drug use practices and reduced overdose risk. In light of the opioid overdose public health emergency and emerging promising results with point-of-care fentanyl drug checking in different settings (Tupper et al. 2018; Krieger et al. 2018), fentanyl-specific drug checking was added by ANKORS as an optional test for festival attendees in 2017.

This report describes participation in, and results of, drug checking (including fentanyl screening by immunoassay strips) at Shambhala festival in the context of the current public health emergency. In addition, we describe patterns of observed illicit drug disposal on site in relation to the fentanyl or colorimetric result.

Methods

Setting The Shambhala festival (Shambhala Music Festival 2018) is an annual multi-day EDM festival in rural BC that has been operating for over 20 years and is annually attended by between 15,000 and 18,000 people. It takes place every August on a 500-acre ranch near Salmo, a town with a year-round population of approximately 1200 people. Guests, staff, and volunteers camp at the ranch for the duration of the festival, temporarily creating a small urban centre.

As one of several harm reduction services offered at the festival, drug checking is performed by trained ANKORS volunteers under a large temporary shelter that is open to guests and is set up in a highly visible central location. Volunteer training consists of online and on site step-by-step, hands-on learning of drug checking protocols (Drug checking at music festivals 2018; ANKORS 2018). Four different technologies were offered in 2017 (Table 1); a more fulsome description of these drug checking technologies is available elsewhere (Kerr and Tupper 2017). Only fentanyl and colorimetric test results are included in this report.

Table 1 Drug checking technologies offered by ANKORS at the 2017 Shambhala festival

Drug checking technology	Specifications
Raman spectroscopy	Smith Detection Ace-ID [001-0182 database], Edgewood, MD, USA
Fentanyl immunoassay test strips	BNTX Rapid Response™ fentanyl urine strip test at a detection level of 20 ng/ml norfentanyl. Markham, ON, Canada; 2013
Colorimetric reagents	Marquis, Mecke, Mandelin, Simons, Froehde, Liebermann, Ehrlich (Dancesafe, Lakewood CO, USA; Testkit Plus, Montreal, Quebec, Canada)
Gas chromatography mass spectrometer (GC-MS)	Perkin Elmer Torion T-9 portable (Waltham, MA, USA)

Research protocol Participation in drug checking was voluntary and anonymous. Using a script, staff explained risks and benefits of drug checking, including the limitations of the fentanyl immunoassay (Table 2). Verbal consent to participate in the research study was sought from participants. All clients were offered colorimetric, Raman spectrometer, and fentanyl strip testing, and a small proportion of clients were randomly offered to have their substances tested with GC-MS. For each sample tested, clients were asked what their expectation of the substance was in advance of the test. This pre-test information, along with the drug checking results, was entered in a testing survey form (see supplemental information 1). Volunteers followed protocols for fentanyl (see supplemental information 2) and colorimetric drug checking (Drug checking at music festivals 2018), and observed and recorded when clients chose to discard their substances on site at an amnesty bin provided. Drug checking results along with safety tips were posted in real time on an electronic screen for participants to read.

Results

Drug checking was offered at the Shambhala festival from August 9 to 12, 2017. Figure 1 shows a breakdown of samples tested. Each sample was assigned a unique number; therefore, if a client tested multiple samples throughout the festival, these would be counted as separate results. Samples were tested with one or more of the following tests: colorimetric reagent, Raman spectrometer, fentanyl immunoassay, and GC-MS. For 1413 (51.9%) samples, clients reported that they would consume the samples themselves only, while 1150 (42.2%) reported testing for self and friends, and 82 (3.0%) reported testing for friends only.

A total of 1971 samples were tested for fentanyl using immunoassay strips, of which 31 (1.6%) tested positive. Among samples tested for fentanyl, 51 (2.6%) of the 1940 negative samples and 5 (16.1%) of the 31 positive samples were discarded on site at an amnesty bin in the ANKORS tent (Table 3).

A total of 2387 samples underwent colorimetric drug checking of which 65 were discarded on site. Among samples for which a belief and a colorimetric test result were recorded, clients' expectations and colorimetric drug checking results were the same (matched) in 1891 (79.2%) of samples, of which 13 (0.69%) were discarded. Expectations and results did not match in 155 (6.5%) and 8 of these (5.1%) were discarded. In the rest of the samples, the belief or test result or both were unknown. Assuming that people with an unknown discard status were randomly distributed, a Fisher's exact test was conducted to compare discarding patterns of clients where belief and result matched, did not match, and unknown belief/result. All three pairs of comparison were significant (p value < 0.001). The discarding pattern in relation to the expectations and/or colorimetric test results are shown in Table 4.

Over 4 days of the festival, 200 guests received naloxone training and 100 naloxone kits were distributed by ANKORS. No morbidity or mortality from opioid overdose was observed or reported at the festival.

Table 2 Limitations of fentanyl drug checking shared with clients as part of the informed consent

- A negative test does not rule out that the drug contains fentanyl.
- Fentanyl can be irregularly distributed in the substance (i.e., pill) and although the portion tested may not have fentanyl and test negative, the remaining substance may still contain fentanyl.
- The test is not 100% accurate even when testing fentanyl under laboratory conditions.
- The validity of fentanyl strips for drug checking is uncertain because samples contain mixtures and it is not known whether other substances can interfere with the test.
- A negative result does not guarantee that your next dose will be free of fentanyl, even if the drugs come from the same "batch" or the same dealer.
- The test strip used can only detect fentanyl and will not be able to detect fentanyl analogs such as carfentanil.

Discussion

The use of psychoactive substances is a common subcultural phenomenon among EDM festival attendees who perceive an enhanced appreciation of the music and overall social experience (Mohr et al., 2018). In the context of the fentanyl overdose epidemic, local public health officials determined that

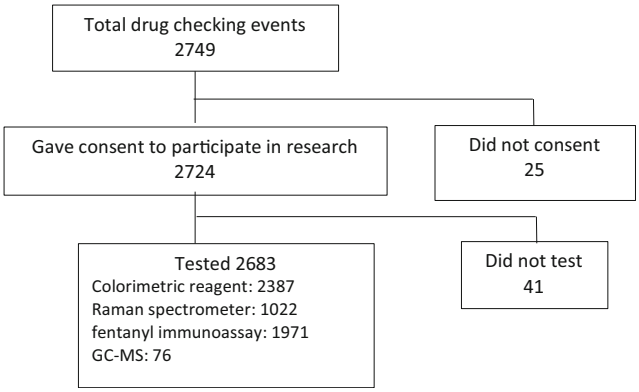

Fig. 1 Breakdown of samples tested

people using illicit drugs attending the Shambhala festival could be at risk of unintended fentanyl exposure due to illicit stimulant adulteration. This assessment was based on anecdotal reports (Kamloops man 2018) and data suggesting that fentanyl adulteration of cocaine in BC posed a public health threat (BC Coroners Service Death Review Panel 2018).

Participation in fentanyl drug checking was high among festival guests (traditionally recreational users of illicit stimulants), none of whom expected their substance to contain an opioid. The fentanyl immunoassay was positive in 11 and 10 samples that guests expected to contain ketamine and MDMA respectively. All samples believed or confirmed to contain cocaine tested negative for fentanyl. Although these results must be interpreted with caution given that the fentanyl immunoassay has yet to be validated outside of laboratory conditions, it is possible that these results were in fact true positives. According to a recent report on drug checking in lab setting tested against the gold standard gas chromatograph/mass spectrometer, the BTNX fentanyl test strips had the lowest detection limit (0.13 μg) and highest sensitivity (96–100%) and specificity (90–98%) (Low-Tech 2018).

Table 3 Clients' pre-drug checking belief (A) and colorimetric drug checking result (B) of the 31 samples that tested positive for fentanyl

Substance	Belief of substance (A)	Colorimetric test result (B)
Opioid	0	1
Ketamine	11	2
MDMA/MDA	10	9
2C family	3	1
Cocaine	3	0
Unknown	2	n/a
Methoxetamine	1	3
Other	1	n/a
Unknown	n/a	10
No result	n/a	4
Speed/methamphetamine	n/a	1
Total	31	31

Table 4 Samples discarded according to clients' belief of what the sample was in relation to colorimetric test result

Match status*	Discarded on site	Total (%)
Matched	13	1891 (0.69)**
Not matched	8	155 (5.16)**
Unknown-belief	8	130 (6.15)**
Unknown-colorimetric result	23	148 (15.54)**
Unknown-Unknown	8	26 (30.77)
Other	5	37 (13.51)
Total	65	2387 (100.00)

*Match status refers to whether clients' expectation of what the substance was, matched the colorimetric drug checking result

**Fisher's exact test between (match and not-match), (match and unknown result), and (match and unknown belief/result) resulted in p value < 0.001

Regarding drug checking results and discarding pattern, although we present fentanyl and colorimetric results separately, it is possible that behaviour may have been influenced by a combination of results rather than a single test. Regardless, our findings seem to support the findings of previous studies suggesting that drug checking may trigger a change in behaviour (Low-Tech 2018), possibly by creating the space for a "teachable moment" at a time when clients are most receptive. We found that those who tested for fentanyl were six times more likely (16.1% vs 2.6%) to discard the sample on site when faced with a positive result. In addition, those who participated in colorimetric drug checking were seven (5.16% vs 0.69%) times more likely to discard their samples when expectations did not match the result. Of note, it is possible that further samples were discarded after the guest left the tent, which would not be captured in these study results. Furthermore, given that many clients tested for self and others, a possible hypothesis is that behaviour change could have been spread beyond individual clients by word-of-mouth sharing of information (Kerr and Tupper 2017).

Several limitations pose challenges to the validity of field drug checking, raising concerns of falsely reassuring clients with negative results. First, drug checking in the field using simple technologies cannot mimic laboratory-controlled conditions and more sophisticated and costly equipment. Second, drug checking results such as those in this study have yet to be validated against gold standard forensic technology. Third, the constant addition of new psychoactive substances to the unregulated drug market is challenging to field drug checking technologies. Given these limitations, we believe that field drug checking services should be delivered in the context of harm reduction programs where clients can have health promoting and personalized conversations about risk.

Future studies should validate drug checking results against gold standard analytic methods and evaluate whether participation in drug checking reduces harms from illicit drug use.

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Compliance with ethical standards

Ethics Harmonized research ethics approval was obtained from the Interior Health Authority and the University of British Columbia Ethics Review boards (Board of Record Approval Reference # 2017-18-019-H).

Conflict of interest The authors declare that they have no conflicts of interest.

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